RESULTS OF
THE 2002 HAWAII SEAT BELT USE SURVEY
JUNE 1-5, 2002

Report to the Department of Transportation
State of Hawaii

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I. INTRODUCTION

This report contains the results of the June 1-5, 2002 Hawaii Statewide Seat Belt Use Survey. Hawaii's seat belt law, HRS§291-11.6, requires all drivers and front-seat passengers four years of age and older to use seat belts. Hawaii has a "primary enforcement" law, meaning that police officers can stop and cite motorists who are in violation of the seat belt law. In "secondary enforcement" states, motorists must be in violation of another law before police can stop and cite them. Studies have shown that belt use rates are higher in states where the law allows primary enforcement of seat belt use. In Hawaii, unbelted front-seat occupants 15 years of age and older can be ticketed and charged a fine for violating the law. If the unbelted front-seat occupant is under the age of 15, the driver is ticketed and fined. Fines administered during the June 1-5 observation period were increased from $45 to $67 statewide. In addition, a "Click It or Ticket" public education and enforcement campaign was conducted throughout the state during the survey period.

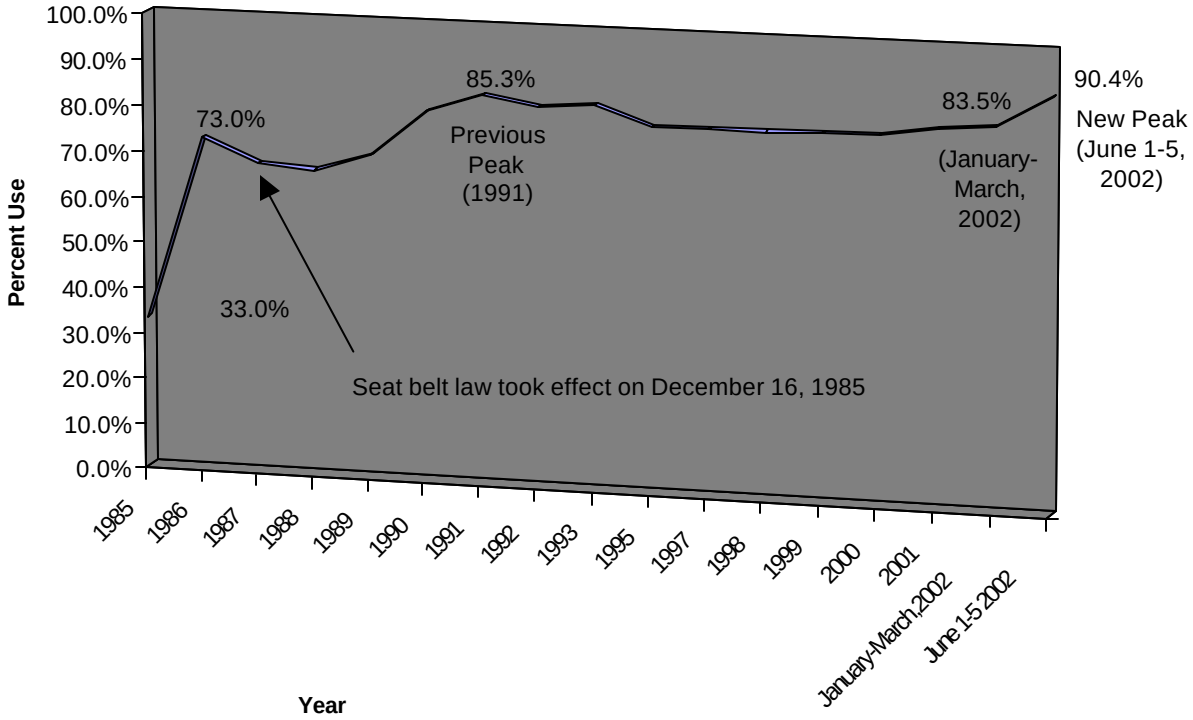
Data were collected statewide and analyzed by the University of Hawaii's Department of Urban and Regional Planning (DURP) for a second time in 2002. The first survey was administered between January and March. Field surveys were conducted between June 1st through June 5th of 2002 at 135 sites on the islands of Oahu, Maui, Hawaii, and Kauai. The methodology is similar to the one used in previous studies conducted annually from 1985 through March of 2002 to ensure compatibility of data over the years. The new Palm handheld computer technology that was integrated into the first round of 2002 data collection was once again used in the second round in place of paper survey forms. A total of 50,545 front-seat occupants were observed throughout the state.

II. SUMMARY

Seat belt use throughout the state dramatically increased during the Click-It-Or-Ticket campaign. The most recent round of seat belt observations in 2002 showed a marked overall increase in seat belt use. At the beginning of 2002, seat belt use was observed at 83.5%. During the second round of

observations, the use rate jumped to 90.4%. This is the highest rate of recorded seat belt use in the 17-year history of the seat belt survey. Prior to that, seat belt use peaked at 85.3% in 1991. Seat belt use remained relatively stable throughout the 1990s and into the new millennium—hovering between 80% and 85%. However, little change was observed in seat belt use for more than a decade. The greatest increase in seat belt use was observed when the seat belt law took effect on December 16, 1985. Prior to that, seat belt use was only 33.0%. Figure 1 depicts these trends.

FIGURE 1
OVERALL SEAT BELT USE BY YEAR, 1985-2002



III. METHODOLOGY

Sample design. A total of 135 observation sites were selected throughout the state (66 sites on Oahu, 24 on Maui, 23 on Hawaii, and 22 on Kauai). Information on the sites can be found in Appendix A6 of this report. The sampling frame includes different road types (i.e., freeway, highway, collector, and local) and volume levels (i.e., high and low). Seat belt estimates were reported according to vehicle type (i.e., car, light truck, van, and sport utility vehicles), occupant position (i.e., driver and front seat passenger), road conditions (i.e., speed limit, number of lanes, and weather conditions), and time (i.e., time of day and day of the week).

A probability-based design was used to produce estimates of seat belt use for the entire state. Site selection was based on three different objectives: (1) to ensure adequate counts to enable statewide, county, and district level estimates of seat belt use; (2) to ensure a mix of roadway types, volumes, and

locations (urban, suburban, and rural); and (3) to allow for comparison across different time periods. Sites were randomly selected from high volume and low volume roadway types. Due to resource constraints, some of the extremely low volume sites were excluded from the final sample. The sites were distributed across each county proportionate to population. Site selection has remained relatively the same since 1986 to ensure compatibility of data across time. The sampling procedures are consistent with federally approved guidelines for seat belt use studies.

Observation requirements. Observers worked in teams of two. Each team was given standardized training and tested for inter-observer reliability. Training included safety requirements for parking at or near the observation sites, the protocol for conducting observations, and guidelines for avoiding potentially dangerous situations. In addition, observers were trained to enter observations into a Palm handheld computer database in order to facilitate accurate data entry and verification. Paper survey forms were used as back up.

Observation teams spent approximately 40 minutes during daylight hours at each site. Observers were given exact street locations, specified by a main street and intersecting street, and the direction of traffic to be observed. The specifications provided were consistent with those used in previous years. For each site and traffic direction, one observer observed all front-seat occupants, while the other member input the data. Observers were instructed to record only those vehicles for which they were certain about occupant seat belt use.[1] The databases were then transferred and prepared for analysis at DURP using SAS, a statistical analysis package.

IV. FINDINGS

The following two sections of this report discuss the findings of the 2002 survey in detail. The results of the analysis are described according to two different aspects of seat belt use. They include details on:

(1) differences by island; and
(2) differences by factor.

(1) DIFFERENCES BY ISLAND

Statewide seat belt use rates during the June 1-5, 2002 observation period substantially increased since the previous data collection period between January and March of 2002. The most recent round of observations were conducted during the last few days of the Click It or Ticket campaign. The program was implemented from May 13 through June 6. Most of the data were collected on Oahu, the state's most populous island. In total, 29,902 front seat occupants were observed on Oahu. On Maui, 9,023 occupants were observed. On Hawaii and Kauai, 5,909 and 5,711 front seat occupants were observed respectively.

[1] When traffic volume became too high for reliable observations on every vehicle, every fifth vehicle was used.

The results of the most recent survey show that the island of Kauai once again had the highest seat belt use rate. The belt use rate on the island was 92.7%--an increase from the 87.7% observed during the previous survey period. Honolulu followed, rising from 83.5% during the earlier observation period to 91.1% during the most recent observations. The island of Hawaii followed, with 89.1% of front seat occupants buckling up. The previously recorded belt use rate was 86.4%. Even though the percentage of belt users on Maui was the lowest in the state, rates nonetheless rose significantly on the island. Approximately 87.7% of the observed front seat occupants on Maui were belted. The results show a ten-percent increase over the 77.6% belt use rate observed earlier in the year, as well as the largest increase in belt use observed on the four main islands. Overall, the results show a promising increase in belt use throughout the state. Figure 2 illustrates 2002 seat belt use rates for the four major islands and statewide.

FIGURE 2
SEAT BELT USE RATE BY ISLAND, JUNE 1-5 2002

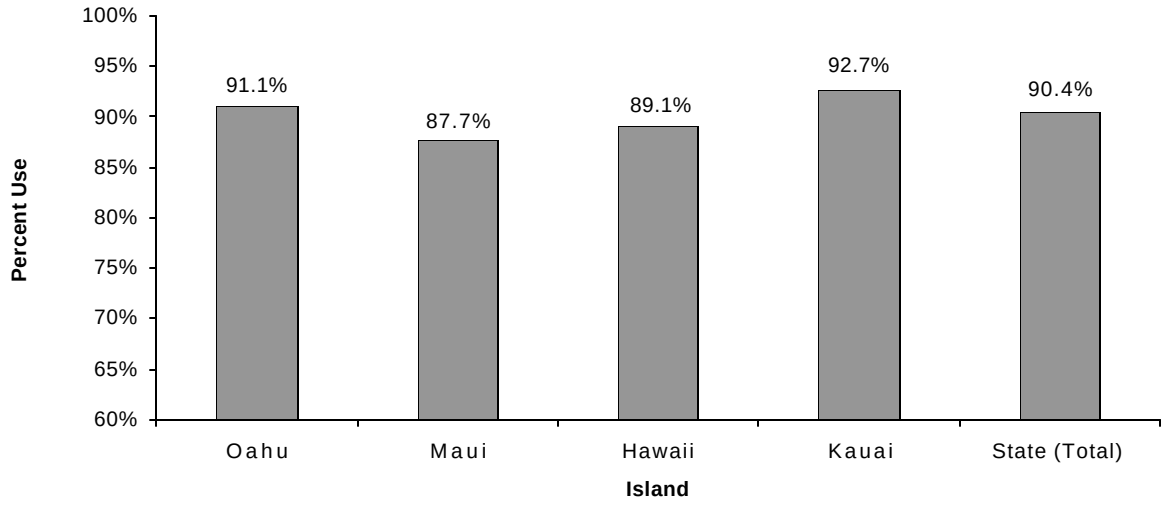


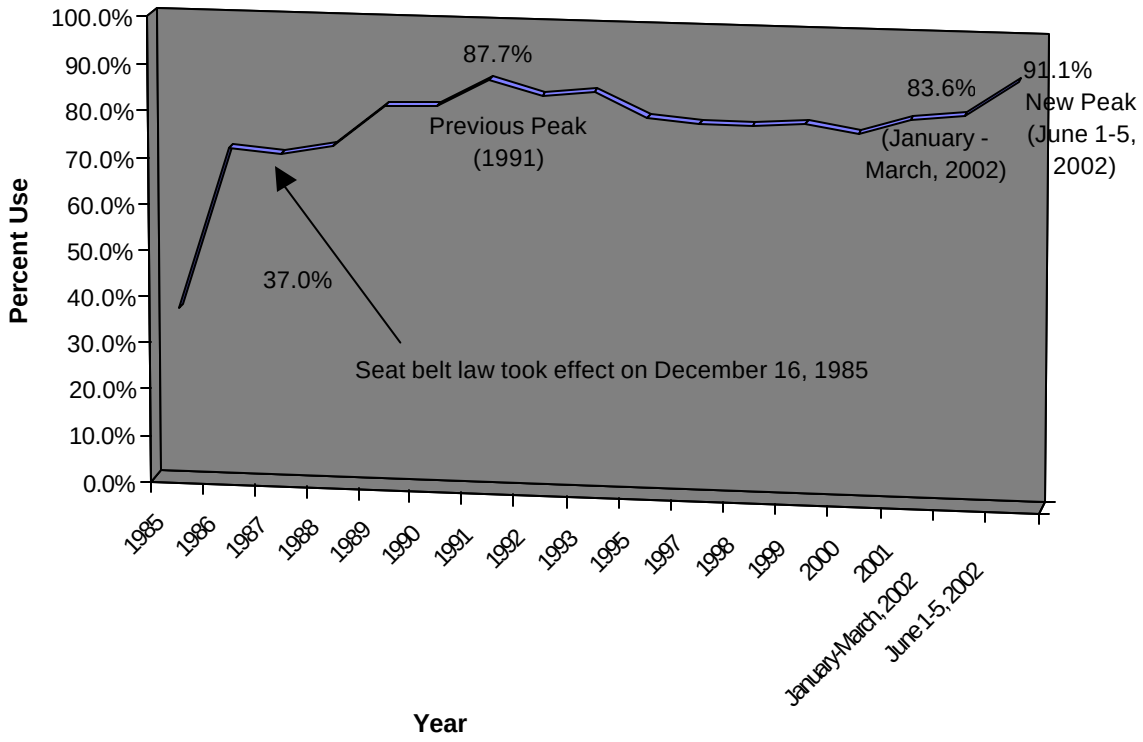
Table 1 details seat belt use rates by island (complete tables are found in Appendix A1 through A5 of this report). This year, new belt use rate peaks were established on all of the islands. Of the 35,176 drivers observed, 91.5% were belted; and of the 15,369 passengers observed 87.9% were belted. The results are consistent with previous surveys in that drivers are belted more often than passengers. The lowest driver and passenger belt use rates were observed on Maui. Of those observed, 89.2% of drivers and 84.3% of passengers on Maui were belted. On Oahu, observed drivers posted an impressive 92.0% belt use rate. Passenger rates trailed at 88.7%. Hawaii's belt use rate for drivers was 89.8%, while the belt use rate for passengers was 87.7%. The highest driver and passenger belt use rates were found on Kauai, with 94.2% of drivers and 90.0% of passengers belted. Site-specific seat belt use rates and locations for all islands can be found on maps located in Appendix A9 of this report.

TABLE 1
SEAT BELT USE BY COUNTY, JUNE 1-5, 2002

ISLAND	DRIVER		PASSENGER		TOTAL		
	Total	% Drivers Belted	Total	% Passenger Belted	Total Belted	Total Observed	% Total Belted
Oahu	21,305	**92.0%**	8,597	**88.7%**	27,235	29,902	**91.1%**
Maui	6,234	**89.2%**	2,789	**84.3%**	7,912	9,023	**87.7%**
Hawaii	3,867	**89.8%**	2,042	**87.7%**	5,263	5,909	**89.1%**
Kauai	3,770	**94.2%**	1,941	**90.0%**	5,296	5,711	**92.7%**
Total	35,176	**91.5%**	15,369	**87.9%**	45,706	50,545	**90.4%**

Figures 3 through 6 show overall seat belt use rates by year on the four major Hawaiian islands. Observed seat belt use rose on all the islands. The reported use rate during the second round of observations in 2002 was 90.4%--an increase over the 83.6% belt use rate observed during the previous period. During this round of observations, Oahu's 91.1% belt use rate finally exceeded the 87.7% peak established in 1991, (Figure 3). The only other island to reach the 90th percentile is Kauai.

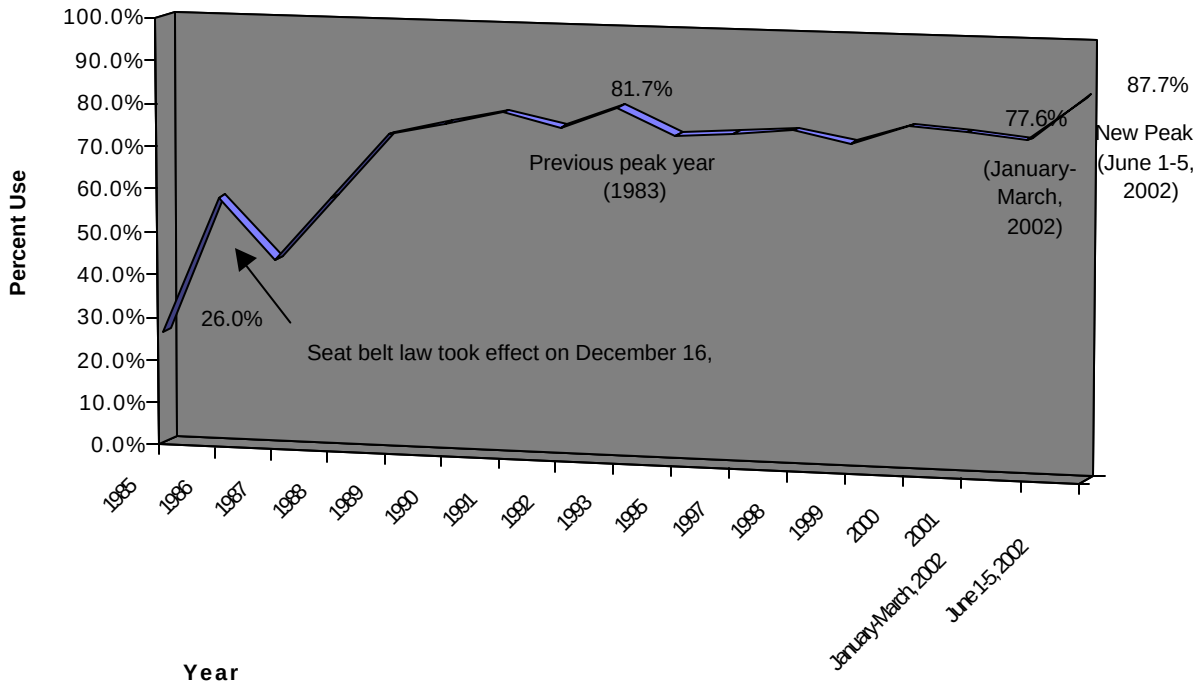
FIGURE 3
OAHU OVERALL SEAT BELT USE BY YEAR, 1985-2002



While Maui once again had the lowest belt use rate in the state, it also posted the highest increase in belt use. During the first round of observations conducted in 2002, only 77.6% of occupants observed were

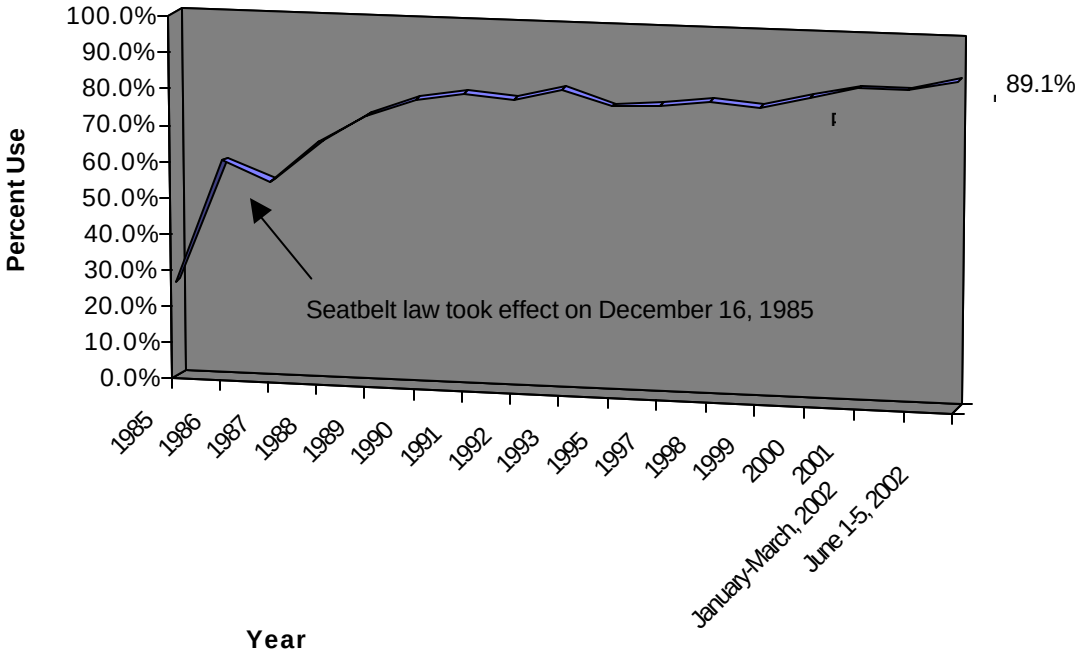
belted. However, that number rose to an impressive 87.7% during the second round of observations. Since 1985, the only year Maui's belt use rate exceeded 80% was in 1993, when 81.7% of those observed were belted. Figure 4 illustrates seat belt use rates on Maui over the years.

FIGURE 4
MAUI OVERALL SEAT BELT USE BY YEAR, 1985-2002



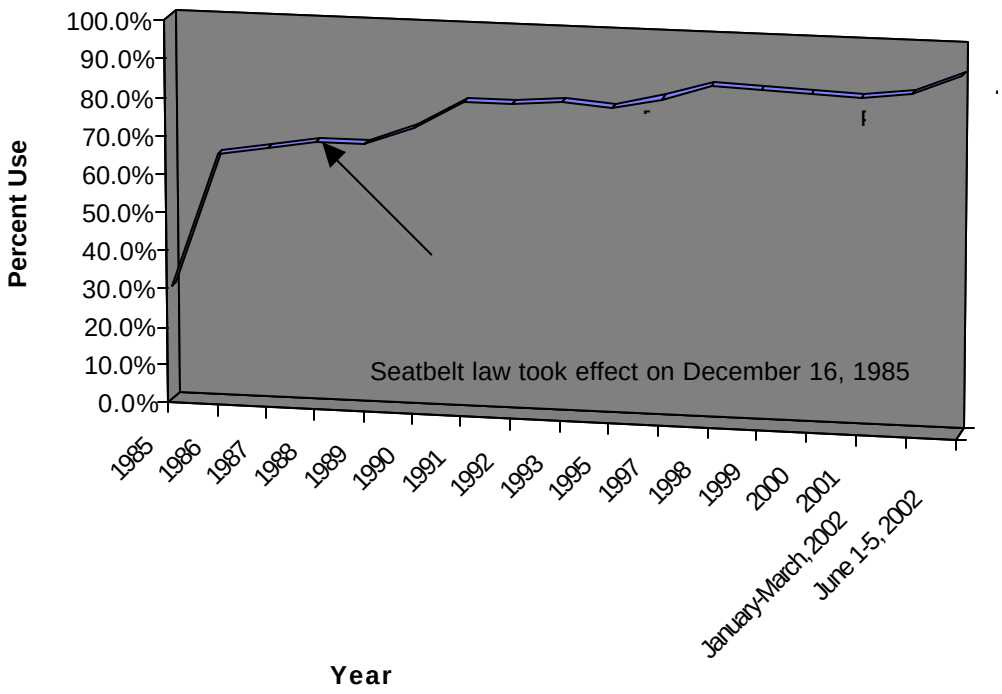
The seat belt use rate on the island of Hawaii increased once again since the first round of observations conducted in 2002. Observed belt use rose to 89.1% in June—an increase over the 86.4% observed during the earlier part of the year, (Figure 5).

FIGURE 5
HAWAII OVERALL SEAT BELT USE BY YEAR, 1985-2002



On Kauai, seat belt use rates among observed vehicle occupants increased from 87.7% to 92.7%. Kauai's seat belt use rate is once again the highest in the state. Figure 6 depicts Kauai's history of belt use.

FIGURE 6
KAUAI OVERALL SEAT BELT USE BY YEAR, 1985-2002



(2) DIFFERENCES BY FACTORS

The following section examines differences in seat belt use rates in relationship to various factors that potentially have an effect upon seat belt use—including vehicle type, traffic volume, weather condition, speed, number of lanes, and day of the week. Over the years, the collected data has shown that seat belt use rates have differed based upon the various factors identified.

Figure 7 contains use rates for drivers and front-seat passengers by vehicle type. Drivers and passengers in cars (91.6%) were belted most often. Occupants in sports utility vehicles (91.3%) and vans (90.9%) followed. Once again, the lowest percentage of belted occupants by vehicle type was observed in trucks (85.8%). These results are consistent with previous surveys.

FIGURE 7
SEAT BELT USE RATE BY VEHICLE TYPE, JUNE 1-5, 2002

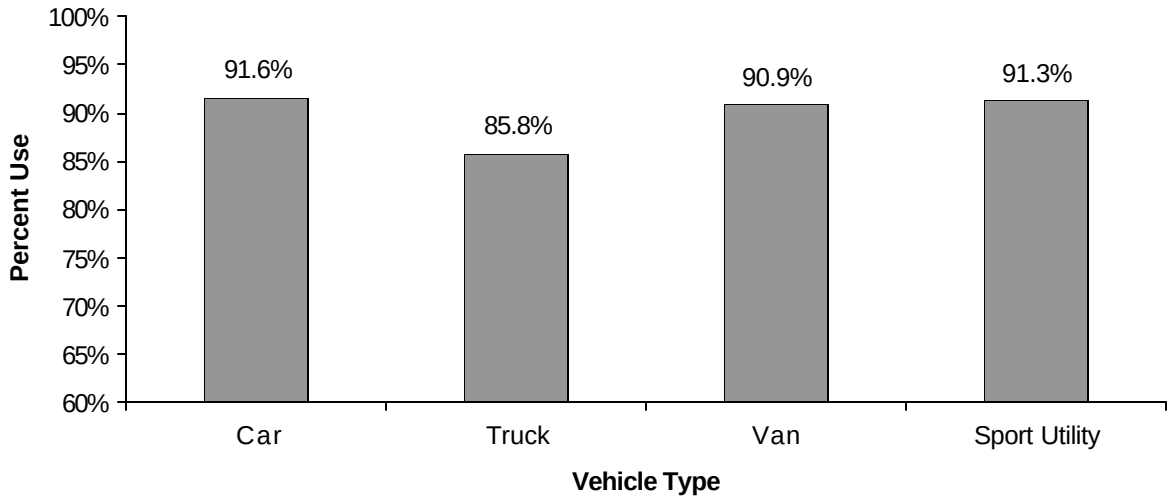


Figure 8 shows the difference in seat belt use rate by traffic volume. Seat belt use at low volume sites was 83.7%. In high volume areas, the use rate was 90.4%. These findings are consistent with previous surveys.

FIGURE 8
SEAT BELT USE RATE BY VOLUME, JUNE 1-5, 2002

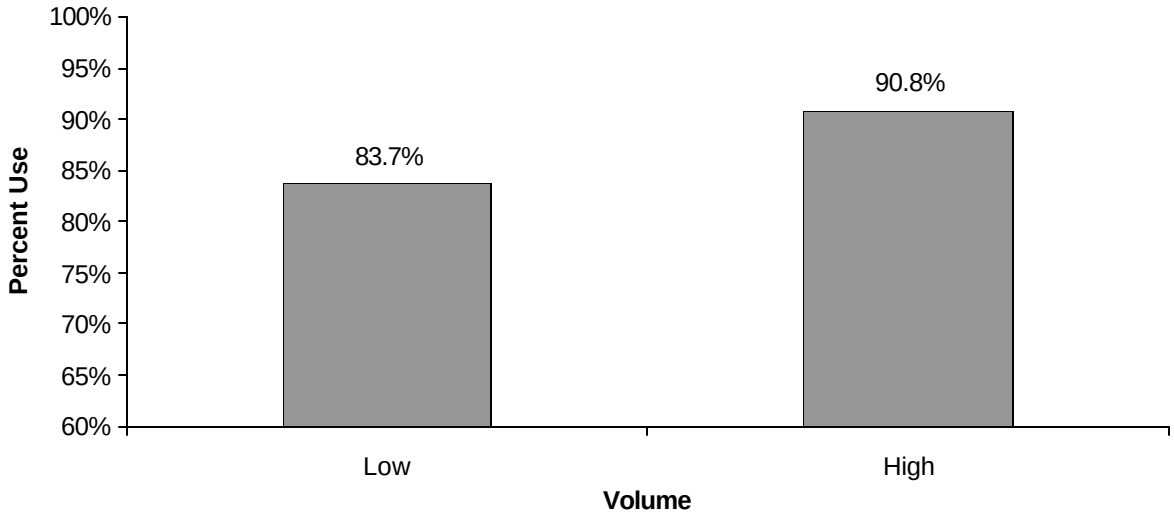


Figure 9 illustrates differences in seat belt use under various weather conditions. The belt use rate under sunny conditions was 91.3%. The belt use rate observed under partly cloudy conditions was 87.9%. With rainfall, the observed use rate was 90.7%.

FIGURE 9
SEAT BELT USE RATE BY WEATHER CONDITIONS, JUNE 1-5, 2002

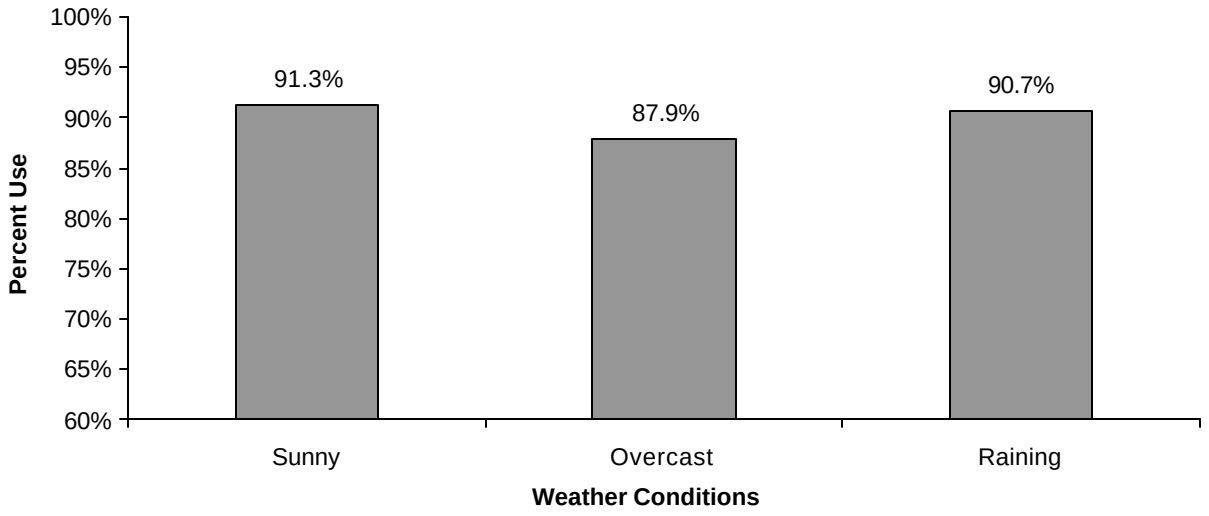
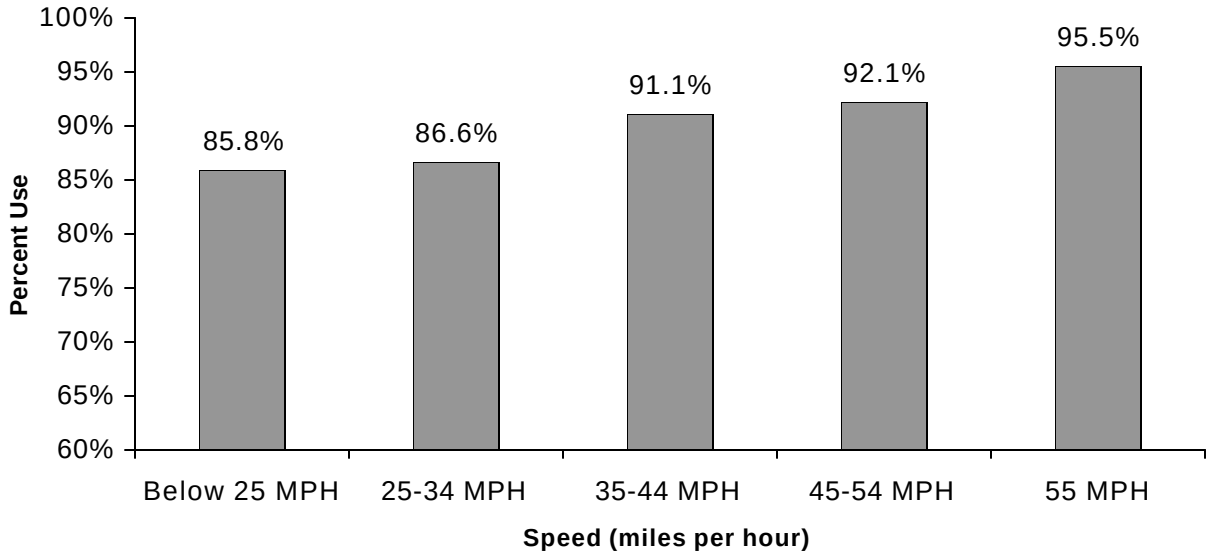


Figure 10 shows that, in general, seat belt use increased as the speed limit increased.

FIGURE 10
SEAT BELT USE RATE BY SPEED, JUNE 1-5, 2002



No recognizable pattern can be seen in Figure 11, which depicts occupant belt use rates by number of lanes. The number of lanes observed was recorded at each site. At high volume sites, only one direction of traffic was observed; while at low volume sites and shopping malls, all directions of traffic were observed. Five lane sites consisted of shopping center sites, which generally have very low speed limits.

FIGURE 11
SEAT BELT USE RATE BY LANES, JUNE 1-5, 2002

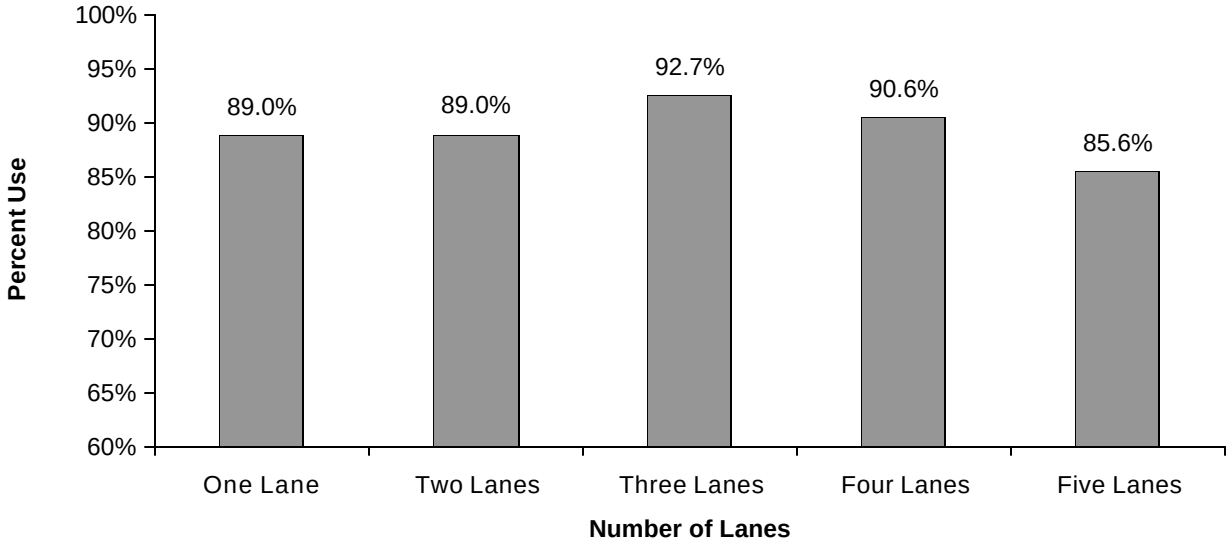


Figure 12 shows a slight difference between weekday and weekend seat belt use. This year's results concur with findings from previous studies that show that weekday belt use is greater than weekend belt use.

FIGURE 12
SEAT BELT USE RATE BY DAY OF THE WEEK, JUNE 1-5, 2002

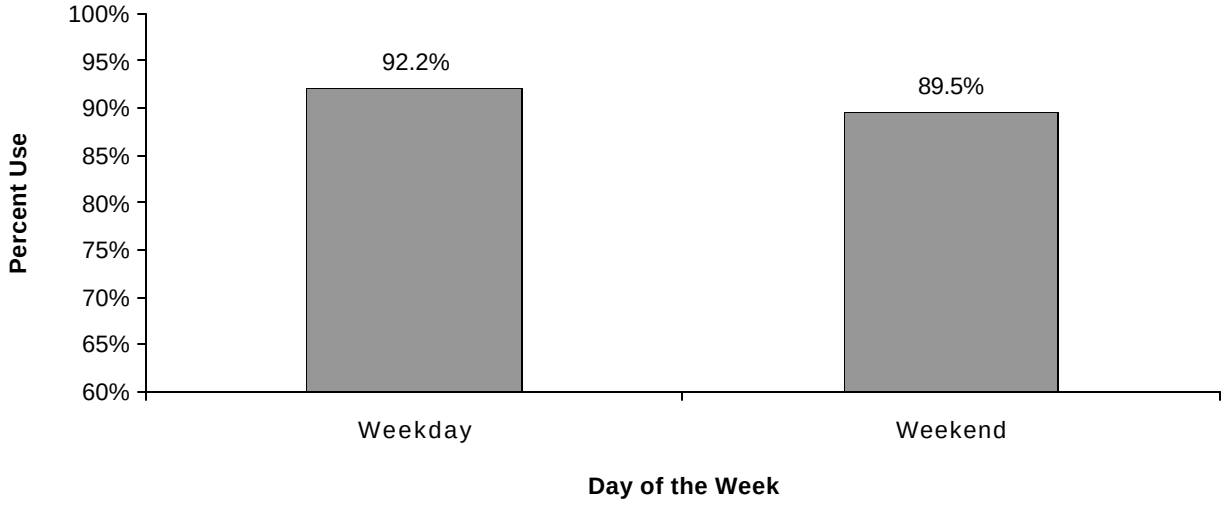


Table 2 provides a detailed breakdown of seat belt use rates by various factors (the complete table is found in Appendix A1 through A5 of this report).

TABLE 2
SEAT BELT USE BY FACTORS, JUNE 1-5, 2002

FACTOR	DRIVER		PASSENGER		TOTAL		
	Total Observed	% Drivers Belted	Total Observed	% Passengers Belted	Total Belted	Total Observed	% Total Belted
VEHICLE TYPE							
Car	19,482	**92.6%**	8,582	**89.3%**	25,709	28,064	**91.6%**
Truck	6,750	**87.4%**	2,487	**81.5%**	7,927	9,237	**85.8%**
Van	4,021	**92.1%**	1,994	**88.5%**	5,468	6,015	**90.9%**
Sport Utility	4,923	**92.3%**	2,306	**89.3%**	6,602	7,229	**91.3%**
VOLUME							
Low	1,898	**85.7%**	719	**78.4%**	2,190	2,617	**83.7%**
High	33,278	**91.9%**	14,650	**88.4%**	43,516	47,928	**90.8%**
TIME PERIOD							
7:00 AM - 10:59 AM	6,122	**93.4%**	2,495	**89.7%**	7,958	8,617	**92.4%**
11:00 AM - 2:59 PM	13,703	**90.6%**	6,095	**86.3%**	17,678	19,798	**89.3%**
3:00 PM - 6:59 PM	15,351	**91.6%**	6,779	**88.7%**	20,070	22,130	**90.7%**
WEATHER							
Sunny	26,159	**92.3%**	11,241	**89.1%**	34,156	37,400	**91.3%**
Overcast	8,496	**89.3%**	3,932	**84.8%**	10,919	12,428	**87.9%**
Raining	521	**89.6%**	196	**83.7%**	631	717	**88.0%**
SPEED							
Below 25 MPH	4,122	**87.4%**	1,883	**82.2%**	5,151	6,005	**85.8%**
25-34 MPH	5,169	**87.9%**	2,291	**83.8%**	6,462	7,460	**86.6%**
35-44 MPH	12,401	**92.2%**	5,737	**88.9%**	16,528	18,138	**91.1%**
45-54 MPH	10,892	**93.0%**	4,457	**89.8%**	14,135	15,349	**92.1%**
55 or more MPH	2,592	**96.0%**	1,001	**94.2%**	3,430	3,593	**95.5%**
LANES							
One Lane	11,926	**90.4%**	5,403	**86.0%**	15,425	17,329	**89.0%**
Two Lanes	8,087	**90.2%**	3,760	**86.5%**	10,542	11,847	**89.0%**
Three Lanes	13,807	**93.4%**	5,554	**91.0%**	17,944	19,361	**92.7%**
Four Lanes	1,055	**91.4%**	480	**88.8%**	1,390	1,535	**90.6%**
Five Lanes	301	**88.4%**	172	**80.8%**	405	473	**85.6%**
WEEK							

Weekday	13,141	**93.2%**	4,527	**89.2%**	16,289	17,668	**92.2%**
Weekend	22,035	**90.5%**	10,842	**87.4%**	29,417	32,877	**89.5%**

V. CONCLUSION AND RECOMMENDATIONS

Results of the 2002 seat belt survey conducted between June 1 and 5 indicate that the increase in seat belt use statewide corresponded with the Click It or Ticket campaign. Between January and June, the seat belt use rate increased from 83.5% to 90.4% statewide. Statewide use rates that high have never been observed in the history of the seat belt survey. The use rate comes close to California's 91% use rate—which leads the nation. Because the overall frequency for statewide observations is very large (50,545), the statistical margin of error with 95% confidence is small ($\pm$0.26%). Because of smaller counts on the neighbor islands, the margin of error is slightly higher (between $\pm$0.32% to $\pm$0.92%) depending on the county.

In response to the findings of the June 1-5, 2002 seat belt survey, the following suggestions should be looked into:

(1) It can be inferred that the belt use rate increased to levels previously unseen in Hawaii as a result of the Click It or Ticket initiative. The increase in public education and enforcement of the seat belt law that were part of the campaign perhaps fueled the increase in belt use. Further studies need to be conducted in order to determine the campaign's effectiveness—both during and after it was initiated. In addition, the state may benefit from continuation of the campaign.

(2) Further study needs to be done to understand locational differences in belt use. Why does Kauai continue to have the highest seat belt use rates in the state?

(3) The reasons for differences in belt use patterns among occupants of various vehicle types need to be examined. Why have truck occupants established a pattern of buckling up less frequently than occupants in other types of vehicles?

(4) Area-specific education and enforcement policies may need to be formulated and implemented. For instance, rural areas such as Waianae (78.9%), Koolauloa (84.5%), and Waialua (82.6%) have consistently had the lowest use rates in the state over the past several years and may need to be targeted.

(5) An assessment of the cost-benefit value of the components of the Click It or Ticket program should be made. Does greater enforcement lead to higher seat belt use at a lower cost? Is public education a cost-effective strategy to increase seat belt use rates?

The results of the second round of seat belt observations show that public education and enforcement can indeed effectively increase seat belt use. However, research needs to be conducted in order to

understand how to maintain, and even increase, belt use rates. Research pertaining to locational, temporal, and behavioral factors could also supplement such an inquiry.

APPENDIX A1 – A8

APPENDIX A9

OAHU:	**MAPS 1 - 5**
MAUI:	**MAPS 6 - 7**
HAWAII:	**MAP 8**
KAUAI:	**MAP 9**